SEQUENCE LISTING

<110> Brown, Michael Paul
      Howley, Paul Michael

<120> Poxvirus Vector Encoding Prostate Specific Antigens for Treatment of Prostate
Cancer

<130> 19610

<140> 10/569,157
<141> 2006-02-21

<160> 11

<170> PatentIn version 3.2

<210> 1
<211> 3271
<212> DNA
<213> virus

<400> 1
atggatagaa atatcaattt tagtcctgta tttatagaac ctaggtttaa acacgagttt   60

ctattatctc ctcaaaggta tttttatata ttagtttttg aagtaatagt agctttgatt   120

atattgaatt ttttctttaa ggaagaaata ttatatacat tttttccgtt agctaagcct   180

tctaaaaatt caataaatag tctgctggat agaactatgt taaaatgtga agaagatgga   240

tctttgatga tttcgagacc ttccggtatc tattcggcct tgagtttaga tggttcaccg   300

gtaaggattt ccgattgtag tttgctttta tcgtcaataa atggcgcatc ctcatcaaca   360

tctccttact ctatttttaa cagacgataa cggatttttat tcttatctat ccgaaaaaag   420

tgatgatgaa gctcttgaag acataaatac tattaagaaa tatatggact ttattctaag   480

cgttcttata cgttctaaag agaaactaga aaatatagga tgttcttacg agcctatgag   540

tgaatcgttt aaggctctta ttaaagtaaa ggatgatggt actttagtaa aagcatttac   600

caagccattg ttaaatcctc attccgaaaa gatagtttta gatagaggtt atacttcgga   660

ttttgctata agcgtaataa gactatctag taaaagcagt tatatacttc ccgcaaatac   720

aaaatacata aatccaaacg agaatatgta tataaacaac ctaatatcac tactgaagcg   780

caactagatc ttccaaaccc acccgctttt tatagtaagt ttttcaccca taaataataa   840

atacaataat taatttctcg taaaagtaga aaatatattc taatttattg cacggtctag   900

aactagtgga tccatgtaca ggatgcaact cctgtcttgc attgcactaa ttcttgcact   960

tgtcacaaac agtgcaccta cttcaagttc gacaagaaaa caaagaaaa cacagctaca   1020

actggagcat ttactgctgg atttacagat gattttgaat ggaattaata attacaagaa   1080

tcccaaactc accaggatgc tcacatttaa gttttacatg cccaagaagg ccacagaact   1140

gaaacagctt cagtgtctag aagaagaact caaacctctg gaggaagtgc tgaatttagc   1200

tcaaagcaaa aactttcact taagacccag ggacttaatc agcaatatca acgtaatagt   1260

1

```
tctggaacta aagggatctg aaacaacatt catgtgtgaa tatgcagatg agacagcaac    1320
cattgtagaa tttctgaaca gatggattac cttttgtcaa agcatcatct caacactaac    1380
ttgatttttg tagatctgtc gaccatttag tatcctaaaa ttgaattgta attatcgata    1440
ataaatgaga gctgtccctc tgcacctcgt cgggacagca agcctcaccc ttggcttctt    1500
gctcctgcta tctctccgcc tggacccagg ccaagccaag gagttgaagt ttgtgacatt    1560
ggtgttccgg catggagacc gaggtcccat cgagaccttt cctaatgacc ccattaagga    1620
atcctcgtgg ccacaaggat ttggccaact caccaagtgg ggcatgggac agcactacga    1680
actcggaagt tatataagga gaagatacgg gagattcttg aacaactcct ataaacatga    1740
ccaggtttat atccgaagca cagatgttga caggactctg atgagcgcta tgacaaacct    1800
cgcagccctg tttccccctg aggggatcag catctggaat cccagactgc tctggcagcc    1860
catcccagtg cacaccgtgt ctctctctga ggatcggttg ctatacctgc ctttcaggga    1920
ctgtcctcgc tttcaagaac tcaagagtga dactttaaaa tctgaggagt tcctgaagag    1980
gcttcaacca tataaaagct tcatagacac cttgccatcg ctgtcgggat tcgaggacca    2040
ggatcttttt gaaatctgga gtaggcttta cgacccttta tattgcgaga gtgttcacaa    2100
tttcaccttc cgcacctggg ccacagagga cgccatgact aagttgaagg agttgtcaga    2160
attatctctg ttatctcttt atggaattca caagcagaaa gagaaatcta gactccaggg    2220
gggcgtcctg gtcaatgaaa ttctcaagaa catgaagctt gcaactcaac cacagaaggc    2280
caggaagttg atcatgtatt ctgcatatga cactactgtg agtggcctgc agatggcgct    2340
agagctttat aatggacttc tacctcccta cgcttcctgc cacataatgg aattgtacca    2400
ggataatggg gggaccttcg tggagatgta ctaccggaat gagacccaga acgagcccta    2460
cccactcacg ctgccgggct gtacccacag ctgccctctg gagaagtttg cagagctact    2520
ggaccccgtg atcccccagg actgggccac agagtgtatg ggcacaagca ccaccaagc    2580
gtcgctgtaa tttttctgtc gacccatggt tgttaaaaag gaattgaaag aaaatatttt    2640
atatcgtaat aaattaaata tgcatgaagg acatcaggag tcttttaaag aacttgaaat    2700
gacaaaacct tatatgttct tcaatgaact agtaggtgaa gaagactata caaagagtt    2760
agaaaattct aatactaagt ttcaaggaca gggccagctt aagctgttat taggagaact    2820
ttatttctta aatacattaa tcaagaataa aacgttatgt tcagatacag ttatcgtgta    2880
tatagggtca gcaccaggaa gccatataaa ttttttatat cattatatgg atgatcttaa    2940
aatagattta aaatggatat taatagatgg tagagatcat gatcgatctc tagaaagtct    3000
taaaaatgtg tctataatac ataggtttgt agatgaacaa tacttgttta agctacgtaa    3060
tatgattagg aaaaaccata aaattgtact gatatcagat attagatcgc taagaggaaa    3120
agaacctact agcgaggacc tattacacga ttacgcgttg cagaatcaaa tggtaagcat    3180
```
2

```
tcttaaacca atagcatcga gcctgaaatg gagatgtccg tttccggatc agtggataag    3240
agacttttac attccttgtg gagatgagtt t                                    3271


<210>  2
<211>  3271
<212>  DNA
<213>  virus

<400>  2
tacctatctt tatagttaaa atcaggacat aaatatcttg gatccaaatt tgtgctcaaa      60
gataatagag gagtttccat aaaaatatat aatcaaaaac ttcattatca tcgaaactaa     120
tataacttaa aaaagaaatt ccttctttat aatatatgta aaaaaggcaa tcgattcgga     180
agatttttaa gttatttatc agacgaccta tcttgataca attttacact tcttctacct     240
agaaactact aaagctctgg aaggccatag ataagccgga actcaaatct accaagtggc     300
cattcctaaa ggctaacatc aaacgaaaat agcagttatt taccgcgtag gagtagttgt     360
agaggaatga gataaaaatt gtctgctatt gcctaaaata agaatagata ggcttttttc     420
actactactt cgagaacttc tgtatttatg ataattcttt atatacctga aataagattc     480
gcaagaatat gcaagatttc tctttgatct tttatatcct acaagaatgc tcggatactc     540
acttagcaaa ttccgagaat aatttcattt cctactacca tgaaatcatt ttcgtaaatg     600
gttcggtaac aatttaggag taaggctttt ctatcaaaat ctatctccaa tatgaagcct     660
aaaacgatat tcgcattatt ctgatagatc attttcgtca atatatgaag ggcgtttatg     720
ttttatgtat ttaggtttgc tcttatacat atatttgttg gattatagtg atgacttcgc     780
gttgatctag aaggtttggg tgggcgaaaa atatcattca aaaagtgggt atttattatt     840
tatgttatta attaaagagc attttcatct tttatataag attaaataac gtgccagatc     900
ttgatcacct aggtacatgt cctacgttga ggacagaacg taacgtgatt aagaacgtga     960
acagtgtttg tcacgtggat gaagttcaag ctgtttcttt tgtttctttt gtgtcgatgt    1020
tgacctcgta aatgacgacc taaatgtcta ctaaaactta ccttaattat taatgttctt    1080
agggtttgag tggtcctacg agtgtaaatt caaaatgtac gggttcttcc ggtgtcttga    1140
ctttgtcgaa gtcacagatc ttcttcttga gtttggagac ctccttcacg acttaaatcg    1200
agtttcgttt ttgaaagtga attctgggtc cctgaattag tcgttatagt tgcattatca    1260
agaccttgat ttccctagac tttgttgtaa gtacacactt atacgtctac tctgtcgttg    1320
gtaacatctt aaagacttgt ctacctaatg gaaacagtt tcgtagtaga gttgtgattg      1380
aactaaaaac atctagacag ctggtaaatc ataggatttt aacttaacat taatagctat    1440
tatttactct cgacagggag acgtggagca gccctgtcgt tcggagtggg aaccgaagaa    1500
cgaggacgat agagaggcgg acctgggtcc ggttcggttc ctcaacttca aacactgtaa    1560
```

3

```
ccacaaggcc gtacctctgg ctccagggta gctctggaaa ggattactgg ggtaattcct    1620
taggagcacc ggtgttccta aaccggttga gtggttcacc ccgtaccctg tcgtgatgct    1680
tgagccttca atatattcct cttctatgcc ctctaagaac ttgttgagga tatttgtact    1740
ggtccaaata taggcttcgt gtctacaact gtcctgagac tactcgcgat actgtttgga    1800
gcgtcgggac aaaggggggac tcccctagtc gtagacctta gggtctgacg agaccgtcgg    1860
gtagggtcac gtgtggcaca gagagagact cctagccaac gatatggacg gaaagtccct    1920
gacaggagcg aaagttcttg agttctcact ctgaaatttt agactcctca aggacttctc    1980
cgaagttggt atattttcga agtatctgtg gaacggtagc gacagcccta agctcctggt    2040
cctagaaaaa ctttagacct catccgaaat gctgggaaat ataacgctct cacaagtgtt    2100
aaagtggaag gcgtggaccc ggtgtctcct gcggtactga ttcaacttcc tcaacagtct    2160
taatagagac aatagagaaa taccttaagt gttcgtcttt ctctttagat ctgaggtccc    2220
cccgcaggac cagttacttt aagagttctt gtacttcgaa cgttgagttg gtgtcttccg    2280
gtccttcaac tagtacataa gacgtatact gtgatgacac tcaccggacg tctaccgcga    2340
tctcgaaata ttacctgaag atggagggat gcgaaggacg gtgtattacc ttaacatggt    2400
cctattaccc ccctggaagc acctctacat gatggcctta ctctgggtct tgctcgggat    2460
gggtgagtgc gacggcccga catgggtgtc gacgggagac ctcttcaaac gtctcgatga    2520
cctggggcac tagggggtcc tgacccggtg tctcacatac ccgtgttcgt tggtggttcg    2580
cagcgacatt aaaaagacag ctgggtacca acaatttttc cttaactttc ttttataaaa    2640
tatagcatta tttaatttat acgtacttcc tgtagtcctc agaaaatttc ttgaacttta    2700
ctgttttgga atatacaaga agttacttga tcatccactt cttctgatat tgtttctcaa    2760
tcttttaaga ttatgattca aagttcctgt cccggtcgaa ttcgacaata atcctcttga    2820
aataaagaat ttatgtaatt agttcttatt ttgcaataca agtctatgtc aatagcacat    2880
atatcccagt cgtggtcctt cggtatattt aaaaaatata gtaatatacc tactagaatt    2940
ttatctaaat tttacctata attatctacc atctctagta ctagctagag atctttcaga    3000
attttacac agatattatg tatccaaaca tctacttgtt atgaacaaat tcgatgcatt    3060
atactaatcc tttttggtat tttaacatga ctatagtcta taatctagcg attctccttt    3120
tcttggatga tcgctcctgg ataatgtgct aatgcgcaac gtcttagttt accattcgta    3180
agaatttggt tatcgtagct cggactttac ctctacaggc aaaggcctag tcacctattc    3240
tctgaaaatg taaggaacac ctctactcaa a                                    3271
```

<210> 3
<211> 3286
<212> DNA
<213> virus

4

<400> 3

```
atggatagaa atatcaattt tagtcctgta tttatagaac ctaggtttaa acacgagttt      60

ctattatctc ctcaaaggta tttttatata ttagtttttg aagtaatagt agctttgatt     120

atattgaatt ttttctttaa ggaagaaata ttatatacat tttttccgtt agctaagcct     180

tctaaaaatt caataaatag tctgctggat agaactatgt taaaatgtga agaagatgga     240

tctttgatga tttcgagacc ttccggtatc tattcggcct tgagtttaga tggttcaccg     300

gtaaggattt ccgattgtag tttgctttta tcgtcaataa atggcgcatc ctcatcaaca     360

tctccttact ctattttaa cagacgataa cggatttat tcttatctat ccgaaaaag     420

tgatgatgaa gctcttgaag acataaatac tattaagaaa tatatggact ttattctaag     480

cgttcttata cgttctaaag agaaactaga aaatatagga tgttcttacg agcctatgag     540

tgaatcgttt aaggctctta ttaaagtaaa ggatgatggt actttagtaa aagcatttac     600

caagccattg ttaaatcctc attccgaaaa gatagtttta gatagaggtt atacttcgga     660

ttttgctata agcgtaataa gactatctag taaaagcagt tatatacttc ccgcaaatac     720

aaaatacata aatccaaacg agaatatgta tataaacaac ctaatatcac tactgaagcg     780

caactagatc ttccaaaccc acccgctttt tatagtaagt ttttcaccca taaataataa     840

atacaataat taatttctcg taaaagtaga aaatatattc taatttattg cacggtctag     900

aactagtgga tccatgtaca ggatgcaact cctgtcttgc attgcactaa ttcttgcact     960

tgtcacaaac agtgcaccta cttcaagttc gacaaagaaa acaaagaaaa cacagctaca    1020

actggagcat ttactgctgg atttacagat gattttgaat ggaattaata attacaagaa    1080

tcccaaactc accaggatgc tcacatttaa gttttacatg cccaagaagg ccacagaact    1140

gaaacagctt cagtgtctag aagaagaact caaacctctg gaggaagtgc tgaatttagc    1200

tcaaagcaaa aactttcact taagacccag ggacttaatc agcaatatca acgtaatagt    1260

tctggaacta aagggatctg aaacaacatt catgtgtgaa tatgcagatg agacagcaac    1320

cattgtagaa tttctgaaca gatggattac cttttgtcaa agcatcatct caacactaac    1380

ttgatttttg tagatctgtc gaccatttag tatcctaaaa ttgaattgta attatcgata    1440

ataaatgaga gctgcacccc tcctcctggc cagggcagca agccttagcc ttggcttctt    1500

gtttctgctt tttttctggc tagaccgaag tgtactagcc aaggagttga agtttgtgac    1560

tttggtgttt cggcatggag accgaagtcc cattgacacc tttcccactg accccataaa    1620

ggaatcctca tggccacaag gatttggcca actcacccag ctgggcatgg agcagcatta    1680

tgaacttgga gagtatataa gaaagagata tagaaaattc ttgaatgagt cctataaaca    1740

tgaacaggtt tatattcgaa gcacagacgt tgaccggact ttgatgagtg ctatgacaaa    1800

cctggcagcc ctgtttcccc agaaggtgt cagcatctgg aatcctatcc tactctggca    1860

gcccatcccg gtgcacacag ttcctctttc tgaagatcag ttgctatacc tgcctttcag    1920
```

5

```
gaactgccct cgttttcaag aacttgagag tgagactttg aaatcagagg aattccagaa    1980

gaggctgcac ccttataagg attttatagc taccttggga aaactttcag gattacatgg    2040

ccaggacctt tttggaattt ggagtaaagt ctacgaccct ttatattgtg agagtgttca    2100

caatttcact ttaccctcct gggccactga ggacaccatg actaagttga gagaattgtc    2160

agaattgtcc ctcctgtccc tctatggaat tcacaagcag aaagagaaat ctaggctcca    2220

aggggggtgtc ctggtcaatg aaatcctcaa tcacatgaag agagcaactc agataccaag    2280

ctacaaaaaa cttatcatgt attctgcgca tgacactact gtgagtggcc tacagatggc    2340

gctagatgtt tacaacggac tccttcctcc ctatgcttct tgccacttga cggaattgta    2400

ctttgagaag ggggagtact ttgtggagat gtactatcgg aatgagacgc agcacgagcc    2460

gtatcccctc atgctacctg gctgcagccc tagctgtcct ctggagaggt ttgctgagct    2520

ggttggccct gtgatccctc aagactggtc cacggagtgt atgaccacaa acagccatca    2580

aggtactgag gacagtacag attaattttt ctgtcgaccc atggttgtta aaaaggaatt    2640

gaaagaaaat attttatatc gtaataaatt aaatatgcat gaaggacatc aggagtcttt    2700

taaagaactt gaaatgacaa aaccttatat gttcttcaat gaactagtag gtgaagaaga    2760

ctataacaaa gagttagaaa attctaatac taagtttcaa ggacagggcc agcttaagct    2820

gttattagga gaactttatt tcttaaatac attaatcaag aataaaacgt tatgttcaga    2880

tacagttatc gtgtatatag ggtcagcacc aggaagccat ataaattttt tatatcatta    2940

tatggatgat cttaaaatag atttaaaatg gatattaata gatggtagag atcatgatcg    3000

atctctagaa agtcttaaaa atgtgtctat aatacatagg tttgtagatg aacaatactt    3060

gtttaagcta cgtaatatga ttaggaaaaa ccataaaatt gtactgatat cagatattag    3120

atcgctaaga ggaaaagaac ctactagcga ggacctatta cacgattacg cgttgcagaa    3180

tcaaatggta agcattctta aaccaatagc atcgagcctg aaatggagat gtccgtttcc    3240

ggatcagtgg ataagagact tttacattcc ttgtggagat gagttt              3286


<210>   4
<211>   3286
<212>   DNA
<213>   virus

<400>   4
tacctatctt tatagttaaa atcaggacat aaatatcttg gatccaaatt tgtgctcaaa      60

gataatagag gagtttccat aaaaatatat aatcaaaaac ttcattatca tcgaaactaa     120

tataacttaa aaagaaatt ccttctttat aatatatgta aaaaaggcaa tcgattcgga     180

agatttttaa gttatttatc agacgaccta tcttgataca attttacact tcttctacct     240

agaaactact aaagctctgg aaggccatag ataagccgga actcaaatct accaagtggc     300
```

6

```
cattcctaaa ggctaacatc aaacgaaaat agcagttatt taccgcgtag gagtagttgt    360

agaggaatga dataaaaatt gtctgctatt gcctaaaata agaatagata ggctttttc     420

actactactt cgagaacttc tgtatttatg ataattcttt atatacctga aataagattc    480

gcaagaatat gcaagatttc tctttgatct tttatatcct acaagaatgc tcggatactc    540

acttagcaaa ttccgagaat aatttcattt cctactacca tgaaatcatt ttcgtaaatg    600

gttcggtaac aatttaggag taaggctttt ctatcaaaat ctatctccaa tatgaagcct    660

aaaacgatat tcgcattatt ctgatagatc attttcgtca atatatgaag ggcgtttatg    720

ttttatgtat ttaggtttgc tcttatacat atatttgttg gattatagtg atgacttcgc    780

gttgatctag aaggtttggg tgggcgaaaa atatcattca aaaagtgggt atttattatt    840

tatgttatta attaaagagc attttcatct tttatataag attaaataac gtgccagatc    900

ttgatcacct aggtacatgt cctacgttga ggacagaacg taacgtgatt aagaacgtga    960

acagtgtttg tcacgtggat gaagttcaag ctgtttcttt tgtttctttt gtgtcgatgt   1020

tgacctcgta aatgacgacc taaatgtcta ctaaaactta ccttaattat taatgttctt   1080

agggtttgag tggtcctacg agtgtaaatt caaaatgtac gggttcttcc ggtgtcttga   1140

ctttgtcgaa gtcacagatc ttcttcttga gtttggagac ctccttcacg acttaaatcg   1200

agtttcgttt ttgaaagtga attctgggtc cctgaattag tcgttatagt tgcattatca   1260

agaccttgat ttccctagac tttgttgtaa gtacacactt atacgtctac tctgtcgttg   1320

gtaacatctt aaagacttgt ctacctaatg gaaaacagtt tcgtagtaga gttgtgattg   1380

aactaaaaac atctagacag ctggtaaatc ataggatttt aacttaacat taatagctat   1440

tatttactct cgacgtgggg aggaggaccg gtcccgtcgt tcggaatcgg aaccgaagaa   1500

caaagacgaa aaaaagaccg atctggcttc acatgatcgg ttcctcaact tcaaacactg   1560

aaaccacaaa gccgtacctc tggcttcagg gtaactgtgg aaagggtgac tggggtattt   1620

ccttaggagt accggtgttc ctaaaccggt tgagtgggtc gacccgtacc tcgtcgtaat   1680

acttgaacct ctcatatatt cttttctctat atcttttaag aacttactca ggatatttgt   1740

acttgtccaa atataagctt cgtgtctgca actggcctga aactactcac gatactgttt   1800

ggaccgtcgg gacaaagggg gtcttccaca gtcgtagacc ttaggatagg atgagaccgt   1860

cgggtagggc cacgtgtgtc aaggagaaag acttctagtc aacgatatgg acggaaagtc   1920

cttgacggga gcaaaagttc ttgaactctc actctgaaac tttagtctcc ttaaggtctt   1980

ctccgacgtg ggaatattcc taaaatatcg atggaaccct tttgaaagtc ctaatgtacc   2040

ggtcctggaa aaaccttaaa cctcatttca gatgctggga aatataacac tctcacaagt   2100

gttaaagtga aatgggagga cccggtgact cctgtggtac tgattcaact ctcttaacag   2160

tcttaacagg gaggacaggg agatacctta agtgttcgtc tttctcttta gatccgaggt   2220
```

7

```
tccccacag gaccagttac tttaggagtt agtgtacttc tctcgttgag tctatggttc   2280

gatgtttttt gaatagtaca taagacgcgt actgtgatga cactcaccgg atgtctaccg   2340

cgatctacaa atgttgcctg aggaaggagg gatacgaaga acggtgaact gccttaacat   2400

gaaactcttc cccctcatga aacacctcta catgatagcc ttactctgcg tcgtgctcgg   2460

cataggggag tacgatggac cgacgtcggg atcgacagga gacctctcca aacgactcga   2520

ccaaccggga cactagggag ttctgaccag gtgcctcaca tactggtgtt tgtcggtagt   2580

tccatgactc ctgtcatgtc taattaaaaa gacagctggg taccaacaat ttttccttaa   2640

ctttctttta taaaatatag cattatttaa tttatacgta cttcctgtag tcctcagaaa   2700

atttcttgaa ctttactgtt ttggaatata caagaagtta cttgatcatc cacttcttct   2760

gatattgttt ctcaatcttt taagattatg attcaaagtt cctgtcccgg tcgaattcga   2820

caataatcct cttgaaataa agaatttatg taattagttc ttattttgca atacaagtct   2880

atgtcaatag cacatatatc ccagtcgtgg tccttcggta tatttaaaaa atatagtaat   2940

atacctacta gaattttatc taaatttttac ctataattat ctaccatctc tagtactagc   3000

tagagatctt tcagaatttt tacacagata ttatgtatcc aaacatctac ttgttatgaa   3060

caaattcgat gcattatact aatccttttt ggtattttaa catgactata gtctataatc   3120

tagcgattct ccttttcttg gatgatcgct cctggataat gtgctaatgc gcaacgtctt   3180

agtttaccat tcgtaagaat ttggttatcg tagctcggac tttacctcta caggcaaagg   3240

cctagtcacc tattctctga aaatgtaagg aacacctcta ctcaaa             3286
```

<210> 5
<211> 381
<212> PRT
<213> rat

<400> 5

```
Met Arg Ala Val Pro Leu His Leu Val Gly Thr Ala Ser Leu Thr Leu
1               5                   10                  15


Gly Phe Leu Leu Leu Leu Ser Leu Arg Leu Asp Pro Gly Gln Ala Lys
            20                  25                  30


Glu Leu Lys Phe Val Thr Leu Val Phe Arg His Gly Asp Arg Gly Pro
        35                  40                  45


Ile Glu Thr Phe Pro Asn Asp Pro Ile Lys Glu Ser Ser Trp Pro Gln
    50                  55                  60


Gly Phe Gly Gln Leu Thr Lys Trp Gly Met Gly Gln His Tyr Glu Leu
65                  70                  75                  80
```

8

Gly Ser Tyr Ile Arg Arg Arg Tyr Gly Arg Phe Leu Asn Asn Ser Tyr
              85   90   95

Lys His Asp Gln Val Tyr Ile Arg Ser Thr Asp Val Asp Arg Thr Leu
              100   105   110

Met Ser Ala Met Thr Asn Leu Ala Ala Leu Phe Pro Pro Glu Gly Ile
          115   120   125

Ser Ile Trp Asn Pro Arg Leu Leu Trp Gln Pro Ile Pro Val His Thr
      130   135   140

Val Ser Leu Ser Glu Asp Arg Leu Leu Tyr Leu Pro Phe Arg Asp Cys
145   150   155   160

Pro Arg Phe Gln Glu Leu Lys Ser Glu Thr Leu Lys Ser Glu Glu Phe
              165   170   175

Leu Lys Arg Leu Gln Pro Tyr Lys Ser Phe Ile Asp Thr Leu Pro Ser
          180   185   190

Leu Ser Gly Phe Glu Asp Gln Asp Leu Phe Glu Ile Trp Ser Arg Leu
          195   200   205

Tyr Asp Pro Leu Tyr Cys Glu Ser Val His Asn Phe Thr Phe Arg Thr
    210   215   220

Trp Ala Thr Glu Asp Ala Met Thr Lys Leu Lys Glu Leu Ser Glu Leu
225   230   235   240

Ser Leu Leu Ser Leu Tyr Gly Ile His Lys Gln Lys Glu Lys Ser Arg
          245   250   255

Leu Gln Gly Gly Val Leu Val Asn Glu Ile Leu Lys Asn Met Lys Leu
          260   265   270

Ala Thr Gln Pro Gln Lys Ala Arg Lys Leu Ile Met Tyr Ser Ala Tyr
        275   280   285

Asp Thr Thr Val Ser Gly Leu Gln Met Ala Leu Glu Leu Tyr Asn Gly
    290   295   300

Leu Leu Pro Pro Tyr Ala Ser Cys His Ile Met Glu Leu Tyr Gln Asp
305   310   315   320

Asn Gly Gly Thr Phe Val Glu Met Tyr Tyr Arg Asn Glu Thr Gln Asn
              325   330   335

9

Glu Pro Tyr Pro Leu Thr Leu Pro Gly Cys Thr His Ser Cys Pro Leu
        340   345   350

Glu Lys Phe Ala Glu Leu Leu Asp Pro Val Ile Pro Gln Asp Trp Ala
        355   360   365

Thr Glu Cys Met Gly Thr Ser Asn His Gln Ala Ser Leu
    370   375   380

<210>   6
<211>   386
<212>   PRT
<213>   human

<400>   6

Met Arg Ala Ala Pro Leu Leu Leu Ala Arg Ala Ala Ser Leu Ser Leu
1   5   10   15

Gly Phe Leu Phe Leu Leu Phe Phe Trp Leu Asp Arg Ser Val Leu Ala
            20   25   30

Lys Glu Leu Lys Phe Val Thr Leu Val Phe Arg His Gly Asp Arg Ser
        35   40   45

Pro Ile Asp Thr Phe Pro Thr Asp Pro Ile Lys Glu Ser Ser Trp Pro
    50   55   60

Gln Gly Phe Gly Gln Leu Thr Gln Leu Gly Met Glu Gln His Tyr Glu
65   70   75   80

Leu Gly Glu Tyr Ile Arg Lys Arg Tyr Arg Lys Phe Leu Asn Glu Ser
            85   90   95

Tyr Lys His Glu Gln Val Tyr Ile Arg Ser Thr Asp Val Asp Arg Thr
            100   105   110

Leu Met Ser Ala Met Thr Asn Leu Ala Ala Leu Phe Pro Pro Glu Gly
        115   120   125

Val Ser Ile Trp Asn Pro Ile Leu Leu Trp Gln Pro Ile Pro Val His
    130   135   140

Thr Val Pro Leu Ser Glu Asp Gln Leu Leu Tyr Leu Pro Phe Arg Asn
145   150   155   160

Cys Pro Arg Phe Gln Glu Leu Glu Ser Glu Thr Leu Lys Ser Glu Glu
            165   170   175

Phe Gln Lys Arg Leu His Pro Tyr Lys Asp Phe Ile Ala Thr Leu Gly
                            10

Lys Leu Ser Gly Leu His Gly Gln Asp Leu Phe Gly Ile Trp Ser Lys
        195   200   205

Val Tyr Asp Pro Leu Tyr Cys Glu Ser Val His Asn Phe Thr Leu Pro
    210   215   220

Ser Trp Ala Thr Glu Asp Thr Met Thr Lys Leu Arg Glu Leu Ser Glu
225   230   235   240

Leu Ser Leu Leu Ser Leu Tyr Gly Ile His Lys Gln Lys Glu Lys Ser
            245   250   255

Arg Leu Gln Gly Gly Val Leu Val Asn Glu Ile Leu Asn His Met Lys
            260   265   270

Arg Ala Thr Gln Ile Pro Ser Tyr Lys Lys Leu Ile Met Tyr Ser Ala
        275   280   285

His Asp Thr Thr Val Ser Gly Leu Gln Met Ala Leu Asp Val Tyr Asn
    290   295   300

Gly Leu Leu Pro Pro Tyr Ala Ser Cys His Leu Thr Glu Leu Tyr Phe
305   310   315   320

Glu Lys Gly Glu Tyr Phe Val Glu Met Tyr Tyr Arg Asn Glu Thr Gln
            325   330   335

His Glu Pro Tyr Pro Leu Met Leu Pro Gly Cys Ser Pro Ser Cys Pro
            340   345   350

Leu Glu Arg Phe Ala Glu Leu Val Gly Pro Val Ile Pro Gln Asp Trp
        355   360   365

Ser Thr Glu Cys Met Thr Thr Asn Ser His Gln Gly Thr Glu Asp Ser
    370   375   380

Thr Asp
385

<210>   7
<211>   156
<212>   PRT
<213>   human

<400>   7

Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ile Leu Ala Leu
1   5   10   15

```
Val Thr Asn Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Lys Lys
            20              25              30

Thr Gln Leu Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu
        35              40              45

Asn Gly Ile Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr
        50              55              60

Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys Gln Leu Gln
65              70              75              80

Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala
            85              90              95

Gln Ser Lys Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile
            100             105             110

Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys
        115             120             125

Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp
    130             135             140

Ile Thr Phe Cys Gln Ser Ile Ile Ser Thr Leu Thr
145             150             155

<210>  8
<211>  30
<212>  DNA
<213>  rat

<400>  8
ctctgaggat cggttgctat acctgccttt                                     30


<210>  9
<211>  30
<212>  DNA
<213>  rat

<400>  9
acttagtcat ggcgtcctct gtggcccagg                                     30


<210>  10
<211>  30
<212>  DNA
<213>  human

<400>  10
ttcaggatta catggccagg acctttttgg                                     30
```

12

```
<210>   11
<211>   30
<212>   DNA
<213>   human

<400>   11
ctcagtacct tgatggctgt ttgtggtcat                                    30
```